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"Pusilla res mundus est nisi in illo
quod quaerat omnis mundus habeat."
— SENECA, *Naturales Quaestiones*

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[title page]

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SOME NOTES ON USES OF PLANTS BY THE COMANCHE INDIANS

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114 THE notes on which this paper is based were gathered chiefly by Mr. Carlson during the summer of 1933, while a fellow of the Laboratory of Anthropology of Santa Fé, New Mexico, and a member of a field group of that institution led by Dr. Ralph Linton. The research was made on the Comanche Indian Reservation near Indiahoma, Comanche County, Oklahoma, as a small part of a general ethnographic study of the Comanche. The briefness of the expedition and the broadness of the general investigation did not permit much time to be spent on ethnobotany. It is realized that this paper does not by any means exhaust the subject of Comanche plant uses, and it was hoped that further field work might be done. As this has not been possible and as the publication of the bulk of the report of the expedition may be delayed, it seems advisable to publish these notes at this time.[1]

[115] 124 An educated Comanche informant-interpreter, Herman Asenap, assisted materially in contacting the older non-English-speaking members of the tribe and was of invaluable aid in acquiring and interpreting information. Whenever possible a specimen of the plant to be identified was gathered in the presence of the informant, but when this was not practical as complete a description as possible was obtained. Suggestions concerning the identity of a number of these plants have been made with some assurance from descriptions, 000 common names, and manner of use. The specimens which were

[1] Thanks are here expressed to the Laboratory of Anthropology of Santa Fé, to Dr. Linton, and to members of the party for permission to publish these data.

[pp 1-516 not processed]

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114 The specimens which were collected have been deposited in the Ethnobotanical Laboratory of the Museum of Anthropology, University of Michigan (catalog numbers 14398–14450).

Mr. Carlson is responsible for the field notes, native terms, and phonetics. Dr. Waldo R. Wedel coöperated with him in the collection of the field data. The identification of the plants, documentation, and comparative data are primarily by Mr. Jones. Some assistance in identifications was received from Dr. J. H. Ehlers and Mr. Alfred F. Whiting.

824 121 177 Profitable investigations of aboriginal uses of plants are practically impossible among many Indian tribes because of their removal to reservations away from their native habitats or because of long contact with the white man and almost complete assimilation of his culture. This is not true of the Comanche, for although probably originally a northern Plains tribe they are now located in the same general region in which they were found by the first white explorers in the area (19, pp. 59–60), and, although they have been in fairly close contact with the white man for over a hundred years, their conversion to "civilization" has not been of such completeness or of such long standing that all their recollections of old times have been lost. The average Comanche has a very good knowledge of his plant environment and particularly of those plants which are or have been of value to his tribe.

824 121 This Comanche knowledge of useful plants and the fact that our list, although not extensive, could be compiled in a very short time would seem to argue against the prevalent opinion that the typical Plains tribes depended but little on them. While we are quite willing to concede that the Comanche were primarily hunters and that they relied largely on game for food, clothing, and the satisfaction of other wants, our data seem to indicate that this side of their life may have been overemphasized and their dependence on plants neglected. We feel that with additional field work the present list of Comanche economic flora could be readily amplified, and, further, that the ethnobotanical approach would be a profitable one among various other Plains tribes. Gilmore's monograph on the uses of plants by the Indians of the Missouri River region (7) demonstrates the great importance of plants in the lives of these sedentary agricultural tribes of the prairies.

114 Such data as exist concerning the ethnobotany of the tribes of

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the plains proper have been gathered chiefly as incidental parts of larger ethnographic studies, are generally meager, and are widely scattered. Two notable lists of plants used by Indians of the northern Plains are those of Grinnell for the Cheyenne (9) and McClintock for the Blackfoot (13). For the tribes of the southern Plains there is almost nothing available.[2] It is to assist in filling this hiatus in southern Plains ethnobotany that this paper is offered.

The data have been tabulated in order to present the material in compact form and to provide a convenient listing of plants by scientific name, common name, Comanche name, or by use (Table I). In the discussion the plants are arranged according to function, i.e. nutritive, medicinal, technological, and the like. Whenever convenient, identical or similar uses of the same or related plants by other tribes are pointed out. A small amount of data on Comanche uses of plants is drawn from other sources. We are grateful to Dr. E. Adamson Hoebel for permission to include some of his unpublished notes on plant names and plant uses of the Shoshone Indians, collected among the northern Shoshone of the Fort Hall Reservation, Idaho, in 1934.

The phonetic alphabet employed in recording the Comanche plant names is that of the International Phonetic Association. Since this alphabet is in common use and should be readily available to the reader it is not reproduced here.[3] We are further grateful to Dr. Hoebel for assistance in checking the phonetics of plant names.

Wissler (26, pp. 218–219) lists among the chief traits of the typical Plains tribes "the dependence upon the buffalo or bison, and the very limited use of roots and berries." Marcy and McClellan (15, p. 102) state that fresh meat was the only food of the Comanche "with the exception of a few wild plants which they find on the prairies." Our data seem to indicate that rather full use was made of the available flora. Many fruits and berries were eaten and must have offered a welcome variation to the monotony of the meat diet. Nuts, starchy roots, bulbs, and various other plant parts were also utilized. Some of these offered only fresh seasonal food, and others

[2] Since this paper was written a monograph by P. A. Vestal and R. E. Schultes has appeared in which over a hundred Kiowa economic plants are discussed (*The Economic Botany of the Kiowa Indians as It Relates to the History of the Tribe*, Botanical Museum, Cambridge, Mass., 1939, 110 p.).

[3] For a slightly modified form of this alphabet see Bloomfield (2, p. 547).

[Text continues on p. 526.—Analyst]

TABLE I

PLANTS USED BY THE COMANCHE INDIANS

Scientific name	Catalog no.	Common name	Comanche name	Comanche use
Allium spp.	No specimen	Wild onions	pakøːk, large onion t?diekøːk, small onion	Bulbs roasted and eaten
Ambrosia psilostachya DC.	14425	Western ragweed	wɔanatsu	No use known to informant
Amorpha angustifolia (Pursh.) Boynton	14433	False indigo	sɔhaʃiaβiˇ	No use known to informant
Andropogon scoparius Michx.	14413	Little bluestem grass	ekɔːnip	Stems used as switches in the sweat lodge; ashes from stems used for treating syphilitic sores
Argemone intermedia Sweet	14443	Prickly poppy	pitsitoːʃɑ	Sore eyes treated with sap
Artemisia filifolia Torr.	14410	Silvery wormwood	pasiwonɔpohɔβiˇ	As mattress in childbirth; as cushion in tipi
Artemisia ludoviciana Nutt.	14415	Lobed cudweed; white sage	pohɔβiˇ	Known to be used but precise use not known
Brayodendron texanum (Scheele) Small	No specimen	Mexican persimmon	dunaseika	Fruits eaten
Camassia esculenta (Ker.) Robinson?	No specimen	Wild hyacinth; camass	sikoː	Roots eaten raw
Carya illinoensis (Wang.) K. Koch	14448	Pecan	nakutβai	Nuts eaten; leaves used in treatment of ringworm

Celtis laevigata Willd.	14435	Southern hackberry	natɔ́kwɔ; mi:tsɔná	Fruits mixed with fat and eaten
Cephalanthus occidentalis L. ..	14417	Buttonbush	p̣ɛsɔ́tai	Game sticks made from wood
Cirsium undulatum (Nutt.) Spreng.	14412	Thistle	tɑ́ɪn	Roots eaten; infusion of roots used as medicine for gonorrhea
Cornus asperifolia Michx.	14430	Rough-leaved dogwood	p̣arioβi	Arrow shafts made from stems
Coryphantha sp.	14403	Cactus	Not recorded	Unfaithful wives punished with spines
Crataegus sp.	14421	Thornapple; locally called "red haw"	ţidiamɔwo:	Fruits eaten
Crataegus sp.....	14416	Thornapple; locally called "black haw"	tú̱poko, fruit wɔkwe'kate, tree	Fruits eaten; inner bark chewed as gum
Croton monanthogynus Michx.	14446	Croton weed	guβsimawa	Leaves mixed with animal brains for use in tanning
Cymopterus acaulis (Pursh.) Rydberg?	No specimen	Cymopterus	tun'ha:	Rootstocks eaten
Diospyros virginiana L.	14436	Persimmon	nase'ka	Fruits eaten fresh or dried
Echinacea sp.	14408	Purple coneflower	ḍukunɔnatsu	Roots used in treating sore throat and toothache
Elymus sp.?	14427	Rye grass	puitsaseni	No use known to informant
Eriogonum longifolium Nutt. .	14429	Eriogonum	ekanatsu; ekanaxópa	Stomach trouble treated with infusion of roots

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TABLE I (*Continued*)

Scientific name	Catalog no.	Common name	Comanche name	Comanche use
Gutierrezia sarothrae (Pursh.) B. & R.	14431	Snakeweed	sanaweha; ohoya	Brooms made of stems; leaves used in treating whooping cough
Helenium autumnale L.?	14422	Sneezeweed	tidikwɔbam	Used in bath for treatment of fever
Helenium microcephalum Gray	14411	Sneezeweed	natsaⁿksi	Used to induce sneezing in order to clear nasal passages or to expel afterbirth
Hoffmanseggia Jamesii T. & G.	14419	*Camote de ratón*	pitsamu	Tubers eaten
Ilex sp.?	No specimen	Holly; yaupon	Not recorded	Beverage made from leaves
Juglans nigra L.	No specimen	Black walnut	muβitai	Nuts eaten; leaves used in treatment of ringworm
Juniperus virginiana L.	14440	Juniper; red cedar	ekawaipᵛ	Fruits eaten; smoke from leaves thought to have purifying effect
Lespedeza capitata Michx.	14441	Bush clover	puhihuβiᵛ	Beverage made from leaves
Liatris punctata Hook.	14449	Button snakeroot	ataβitsanoi	Roots chewed for juice; remedy for swollen testes
Lophophora Williamsii (Lem.) Coulter	No specimen	Peyote	Not recorded	Used in ceremonies for narcotic effect
Maclura pomifera (Raf.) Schneider	14399	Osage orange; *bois d'arc*	ohahupiˢ	Bows manufactured from branches; infusion of roots used in treatment of sore eyes

Malvastrum coccineum (Pursh.) A. Gray	14450	Red false mallow	yɔkanatsu	Infusion of plant used for reducing swellings
Morus rubra L.	14434	Red mulberry	etehup*; ɔhɔβoko	Fruits eaten
Nelumbo lutea (Willd.) Pers.?	No specimen	Yellow lotus	keʎiats	Roots boiled and eaten
Nymphaea advena Ait.?	No specimen	Yellow pond lily	keʎiata	Roots boiled and eaten
Opuntia sp.	No specimen	Prickly-pear cactus	wɔkwɜsi	Fruits eaten
Petalostemum purpureum (Vent.) Rydb.	14409	Purple prairie clover	pakɜitɔ	Roots chewed for sweet flavor
Prosopis glandulosa Torr.	14447	Mesquite	namoβitɔni; natɔɔkwe	Meal from pods eaten; leaves used to neutralize stomach acidity
Prunus angustifolia Michx.	14444	Chickasaw plum	Not recorded	Fruits eaten fresh or stored
Prunus spp.	No specimen	Wild plums	yusɔkə, early plum parawasɔkə, late summer plum kusisɔkə, fall plum natɔmə, dried plum as it falls to the ground suikui, one particular plum	Fruits either eaten fresh or dried and stored for later use
Psoralea hypogeae Nutt.?	No specimen	Indian breadroot	e'kakoni	Roots eaten raw

TABLE I (*Concluded*)

Scientific name	Catalog no.	Common name	Comanche name	Comanche use
Quercus marilandica Muench.	14442	Blackjack oak; barren oak	ɖuhuɪpᵛ	Acorns eaten; leaves used as cigarette wrappers
Quercus sp.	No specimen	Oak	pasapɔni	Acorns eaten; trunks used for fence posts
Rhus glabra L.	14420	Smooth sumac	ɖimɘyoᵛ	Fruits eaten by children; leaves added to tobacco for smoking
Rhus trilobata Nutt.	14438	Ill-scented sumac; skunkbush	ɖatsipᵛ	Bark used in treating colds
Ribes odoratum Wendl.	14439	Wild currant	huaβɔkoɪ	Fruits eaten
Salix sp. (Salix nigra?)	14445	Willow	ohasɔhɜβʷᵛ	Sores eyes treated with ashes
Sapindus Drummondii H. & A.	14432	Soapberry	ɔtɘmitsɔnaɪ	Arrows for *aratsi* game made from stems
Smilax bona-nox L.	14414	Greenbrier	ʇamɘtsoi	Leaves used as cigarette wrappers
Solanum sp.	14424	Nightshade	dɔɪpɔtɔtsi	Used in a general tonic and tuberculosis remedy
Sophora secundiflora (Orteg.) Lag.	No specimen	Mescal bean	Not recorded	Beans used as ornaments, possibly for ceremonial purposes
Typha latifolia L.	No specimen	Cattail	pisbuɪni	No use known to informant
Vitis spp.	No specimen	Wild grapes	Not recorded	Fruits eaten fresh or dried for storage
Yucca louisianensis Trelease	14418	Soapweed; yucca	muɪmutsi	Roots used as soap
Zanthoxylum americanum Mill.	14398	Prickly ash; toothache tree	ʇunɘnatsu	Bark used as medicine for fever, sore throat, and toothache

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Unidentified (fam. Cactaceae) *	No specimen	Cactus	eka mitsa:	Probably eaten
Unidentified	14401		itse; ʇiməyhə	No use known to informant
Unidentified	No specimen		kusi:poko	Berries eaten
Unidentified	14406		kusiwɔna	No use known to informant
Unidentified	14426		mawitɔokᵛ	Decoction used in treatment of constipation and gonorrhea
Unidentified (fam. Labiatae)...	14423		nemeʌisas	Leaves used as perfume
Unidentified	No specimen		paiyap	Roots roasted or boiled and eaten
Unidentified	14400		pehenatsu; pehеʌ	Used to check menstrual discharge
Unidentified	14437		poiya	Decoction of leaves used in treatment of fever
Unidentified	No specimen		qɔtanarixka	"Roots" roasted in fire and eaten
Unidentified	No specimen		sehetsitsina	Roots boiled or roasted and eaten
Unidentified	No specimen		taɒaxko	Roots cooked with fat to make soup
Unidentified	No specimen		totox'd	Tubers eaten
Unidentified	No specimen		tsuns	Roots roasted and eaten
Unidentified (fam. Cactaceae)..	No specimen	Cactus	Not recorded	Fruits eaten

* Obtained in Texas.

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824 262 were preserved for later use. The manner of preparation and storage is of considerable interest.

824 262 251 The fruits of the persimmon (*Diospyros virginiana*) were eaten fresh or were dried and stored for future comsumption. The persimmon was commonly used in this manner by various tribes in the southern prairies and in the Southeast, and it is frequently mentioned in early historical accounts. The common method of preparation for storage seems to have been to beat the ripe fruits to a pulp, remove the seeds, and dry the paste. The cakes thus formed were later softened in water and prepared in various ways for eating. The persimmon has achieved little commercial importance, but is still widely used and esteemed by Indians and whites wherever it is available. An informant also described a black persimmon (Comanche: *dunaseika*) obtained in Texas and Mexico. This was doubtless the Mexican persimmon (*Brayodendron texanum*), which occurs from central Texas southwestward into Mexico.

The fruits of the mulberry (*Morus rubra*) were eaten fresh, when ripe, but no attempt was made to store them. This species is the one most generally preferred by Indians, from the Iroquois country to Kansas and Missouri and southward.

The fresh ripe fruits of two hawthorns or "haws" (*Crataegus spp.*) were eaten by the Comanche. According to an informant, one should shout like a wolf before partaking of them, or he will be sure to get stomach-ache and constipation. An indication of the wide use of Crataegus fruits is a list, compiled by Yanovsky (27, pp. 30–31), of eleven species used by various tribes of Indians from the eastern states to California and British Columbia.

The Comanche names for several wild "plums" were recorded, including designations for early plums, late summer plums, and fall plums. It is quite likely that some of the "plums" are wild cherries or chokecherries. Only one was collected, the Chickasaw plum (*Prunus angustifolia*). The fruits of this species were either eaten fresh or stored for winter use. Another kind of plum (Comanche: *su:kui*) was also said to be stored after the seeds had been removed and the fruits dried on a hide in the sun. Later they were boiled in water and eaten. In the winter the Indians sometimes obtained [222] plums by tracking pack rats to their nests and taking the hoarded supply.

Several species of wild grapes (*Vitis spp.*) were available to the

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Comanche and were either eaten fresh or dried in the sun and stored. The dried fruits were dampened, worked into cakes, and baked, fat sometimes being added in the process. Wild currants (*Ribes odoratum*) were eaten fresh, but were not preserved, as they were among many tribes. Another fruit (Comanche: *kusi:poko*) was not seen, but was described as being black, and round, like a grape, and was said to be eaten fresh. Children were reported to be very fond of the sour acid fruits of the sumac (*Rhus glabra*), and various species were eaten by Indians wherever sumac was available.

The berries of the juniper or red cedar (*Juniperus virginiana*) also served as food on occasion, the practice of eating juniper berries of various species being common among the Indians of the Southwest and elsewhere. The Comanche name for the red cedar was given as *ekawa:p*^{v}, and it was explained that *eka* is the term for "red." No etymology of *wa:p* was obtained. To judge from Chamberlain's discussion (6, pp. 63–64), *wap* seems to be a root word for "cedar" in the Shoshonean languages. If this is the case, then the Comanche term *ekawa:p*^{v} is an exact equivalent of the colloquial English term "red cedar" for the same plant.

The succulent fruits of prickly-pear cactus (*Opuntia sp.*) were eaten fresh and were also dried for winter use. No specimens were collected, but the descriptions by informants leave no doubt as to the identity of the plants. The spines were rubbed from the fruits designed for storage, the seeds removed, and the pears dried in the sun. Another cactus, also, was edible, but an informant stated that before eating its fruit one should take the red juice and paint a cross on his forehead to prevent consequent diarrhea. A third cactus (Comanche: *eka mitsa:*) was said to be obtained in Texas, but the notes do not mention whether or not it was a food plant.

The fruits of the southern hackberry (*Celtis laevigata*) were beaten, pits and all, into a pulp and mixed with fat. This mixture was rolled into balls, which were placed on the ends of sticks and roasted over a fire. The Pawnee had a similar method of preparing hackberries, but added parched corn as well as fat (7, p. 76). Hackberries were commonly eaten by Indians of the Southeast, the Plains, and the Southwest, the usual practice being to consume pit and all. In this connection it is interesting to note that in chemical analyses of hackberries prepared in the Indian manner Yanovsky *et alii* (29) found not only considerable amounts of carbohydrates and protein

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824 but also a high mineral content. The chief mineral constituent was
262 calcium carbonate, which accounted for about one quarter of the
251 dry weight of the fruits. It seems that the scanty-pulped, unpromis-
145 ing-appearing hackberry may have been a valuable element in the diet of the Indians.

824 The tuberous roots of the Indian potato or *camote de ratón* (*Hoff-*
262 *manseggia Jamesii*) were eaten raw or were boiled. Roots of related species were similarly treated by the Apache and certain Pueblo Indians of the Southwest (3, p. 52; 4, p. 42).

[252] The "roots" of another plant (Comanche; *tun'ha:*) were said to be eaten fresh or after they had been peeled, dried in the sun, and pulverized. The plant, which was described as growing along with the mesquite, was not seen, but the description and the manner of use suggest that it was probably some member of the genus Cymopterus. This opinion is strengthened by the similarity of the Comanche name to the Gosiute term (*tuńa*) for *Cymopterus montanus* (6, p. 96). A single species (*Cymopterus acaulis*) is listed as occurring in Oklahoma (23, p. 373).

[252] Two kinds of "wild onions" were described. A large, sweet-flavored variety (Comanche: *pakø:k*) was prepared by braiding the plants together and roasting over a fire. A smaller onion (Comanche: *t?diekø:k*), with red flowers, was considered less desirable. Wild onions were commonly eaten by various tribes of Indians, and it is not unlikely that both these plants actually belong to the genus Allium. Several species occur in Oklahoma.

Another plant (Comanche: *siko:*) was said to have leaves somewhat like those of a wild onion and to have blue flowers. The "root" (bulb?), which is eaten raw, has a sweet taste. This description strongly suggests the camass or swamp sego (*Camassia esculenta*), an important food plant of the northern Plains and the Plateau regions. The Gosiute name *pa-si-go* (6, p. 30) and the Snake name *pasego* (1, p. 9) are somewhat similar to the *siko:* of the Comanche. The Paiute name (*sego*) and the Gosiute name (*sigo*) (5, p. 498; 6, p. 30) for the Mariposa lily (*Calochortus spp.*) are even more similar to the Comanche term, but A. F. Chamberlain (5, p. 498) points out that the word *sego* in the Paiute language is a general term for bulbous roots. Calochortus, apparently, is eliminated because it does not have a blue flower and does not occur in Oklahoma (23). *Camassia esculenta* fits the description well and is available in Comanche

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County (23, p. 56); it is probably the plant to which the informant had reference. 824 262

The underground portion of a plant (Comanche: *e'kakoni*) described as "growing like a radish and having a root like a radish" was said to be peeled, and eaten raw. The "root" was further described as red and sweet-tasting. Except for the color, the plant might well be the widely used prairie turnip or *pomme blanche* (*Psoralea esculenta*) of the northern Plains. Grinnell (9, p. 178) describes, however, the Cheyenne use of a related species (*Psoralea hypogeae*) the root of which is red and which bears the same Cheyenne name as the *pomme blanche*, with a prefix meaning "red." This latter plant occurs in southwestern Oklahoma and may be the one in question.

A plant (Comanche: *totoz'd*) resembling a small tomato bears a "root" (tuber?) about the size and shape of a walnut. This "root" is peeled before being eaten; the flesh is light in color. The description applies well to the wild potatoes (*Solanum Jamesii* and *Solanum Fendleri*) commonly used in the Southwest except that the plants are said to "appear in the spring and not last long." These wild potatoes are not listed in the flora of Oklahoma (23).

Several other plants which produced underground parts useful as food were mentioned by informants, and the Comanche names have been recorded. An herb (Comanche: *taḫaxko*) was collected in the spring, and the roots were cooked with fat to make a soup. A grayish vine (Comanche: *tsuns*) grows deep and produces a root which is roasted after its thin skin has been removed. (This might be some species of Smilax.) A "root" described as "like a sweet potato" (Comanche: *qɜtanarixka*) was said to grow in sandy places. This "root" is peeled and roasted. Another edible "root" which was compared to a potato has the Comanche name *sehetsitsina*. It was eaten either boiled or roasted. On the basis of its name and its use Hoebel (correspondence, April, 1939) suggests that this is the Indian potato, a plant which, he notes, "Grows in hills, flowers like Sweet William," and has "small white tubers, ripe in spring, [that are] boiled and eaten." Even with this description we are unable to suggest a specific identification. 824 262 252

A plant (Comanche: *paiyap*) was described as having a blossom like that of a sunflower, and edible "roots" prepared by roasting or boiling. This suggests the so-called Jerusalem artichoke (*Helianthus* 824 262

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824 *tuberosus*), but some other plant might fit the description equally well.
262 Hoebel (10) records three Shoshone food plants the names of which suggest a relationship to the Comanche *paiyap*. The first of these (Shoshone: *yep* or *muhaiyep*) has a single "root," grows in the hills, and is harvested in early March. The second (Shoshone: *ṭimbiyep*, that is, "rock *yep*") grows in rocky outcrops. It is of interest to note here that Chamberlain (6, p. 46) gives the Gosiute term *tiṁ-bo-ip* (rock + root + plant) for plants growing over rocks. The third has the Shoshone name *piayep*, meaning "big *yep*," which appears to be the Shoshone equivalent of the Comanche *paiyap;* it is described as having several large tubers.

824 The pod of the mesquite (*Prosopis glandulosa*) contains a con-
252 siderable amount of gummy saccharine material, of which a number
263 of analyses have been made. One of the more recent shows the beans to contain about twenty per cent sugar (28, p. 656). The Comanche
[415] crushed them in a mortar made of buffalo hide, using a pestle of mesquite wood. After the beans were crushed, the seeds were removed and the pods pounded to a fine meal, which was used alone or added to corn meal as a sweetening. A mush was prepared by
[272] mixing mesquite meal with marrow, and a drink (Comanche: *pihi-sawanap*) was made by combining mesquite meal and corn meal in water. Whether or not this drink was allowed to ferment is not mentioned in the notes. The Comanche preparation and uses of
[710] the mesquite beans are almost identical with those of the Apache and the tribes of the Gila region of Arizona (3, pp. 43–44; 4, pp. 41, 53), where the mesquite was a staple food. Among these tribes a fermented beverage was prepared from the mesquite alone or from a mixture of mesquite and corn meal.

824 In times of scarcity the acorns of the blackjack oak (*Quercus*
261 *marilandica*) were eaten. They were shelled and boiled, and might
171 be stored for future use. The Comanche, unlike many other tribes, did not grind them into meal, but ate them whole. Castetter (3, p. 47) reports that certain of the Pueblos also boiled the kernels whole. Acorns were widely used as food by various tribes, particularly in the Southwest, the Southeast, and California, and among some Indians in the latter region they were the major food staple.

The roots of several plants were eaten or chewed merely for their flavor. These seem to have been chiefly in the nature of famine foods and food supplements rather than staples. The roots of a

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thistle (*Cirsium undulatum*), the Comanche name of which was *tsɔn*, were eaten raw. This same species (listed as *Cnicus undulatus*) and others were used in much the same manner by the Gosiute (6, p. 56), who called the plants *tsin'ga* or *tsi'na*. The Snake Indians ate the roots of a thistle (listed as *Cnicus eriocephalus*, 1, p. 10), which they called *tsinah*. Hoebel (10) gives the Shoshone name of another thistle as *tsɔ'ntnə* and states that the root was eaten after being roasted in ashes. Its stalk, while young and tender, was eaten raw, and had the interestingly similar Shoshone name *tsɔ'ngabɔk*. A plant not collected and not seen but described as a water lily furnished edible roots, which were prepared by boiling. Two plants of the water-lily family (Nymphaeaceae) which were widely used by Indians in this manner and which would have been available to the Comanche (23, pp. 144, 145) are the American lotus (*Nelumbo lutea*) and the yellow pond lily (*Nymphaea advena*). The plant in question was probably one of these. The roots of the button snakeroot (*Liatris punctata*) were chewed, the juice being swallowed for its rich fatty taste, and those of the sweet-flavored purple prairie clover (*Petalostemum purpureum*) were likewise relished. The roots of the purple prairie clover and the white prairie clover (*Petalostemum candidum*) were similarly used by the Ponca (7, p. 94); those of another prairie clover (*Petalostemum oligophyllum*) found favor among some of the Pueblo Indians of New Mexico (3, p. 33). The inner bark of a hawthorn (*Crataegus sp.*) was said to serve as a chewing gum.

The nuts of the pecan (*Carya illinoensis*) were eaten fresh or were stored, without preparation, for winter use, as were those of the black walnut (*Juglans nigra*). Native wild pecan trees are plentiful in the rich valleys of the Comanche county and southward, and the nuts were prized by the Indians. They have been adopted as a delicacy by the white man, also, and the produce of both wild and cultivated trees is today an item of considerable economic importance.

Most Indian tribes make considerable use of plants as salads or greens and also steep the leaves in water to prepare various beverages. It is surprising that the Comanche notes do not include a single plant used for greens, and mention only two whose leaves were utilized in making drinks. The leaves of bush clover (*Lespedeza capitata*) were boiled in water to furnish a tea. The other beverage was prepared from the foliage of a plant said to grow in damp places and to have red fruits. This description strongly suggests the mem-

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824 bers of the genus Ilex, which were similarly used. The well-known
262 "black drink" of the Southeastern Indians was prepared from *Ilex*
272 *vomitoria*, *Ilex cassine*, and perhaps from other species. However, although four species of Ilex are listed for Oklahoma (23, pp. 299–300), their range is given as in the southeastern part of the state, and they perhaps do not occur near the Comanche reservation.

Hoebel's notes on the Shoshone (10) contain an interesting item to which we know no parallel. He records the use of a plant (Shoshone: *po':int*^{a}) which is described as similar to the maidenhair fern (*Adiantum spp.*). The minute orange "seeds [sporangia?] in the leaves" were threshed by rubbing the leaves between the hands, and were then winnowed, ground, and boiled in water for soup.

824 A number of Comanche plant medicines were recorded, for a
278 rather wide variety of ailments. Most of these medicines seem to be in the nature of practical home remedies, and few have anything of magic or of ceremony about them. Chamberlain (6, p. 46) gives the Gosiute term for medicine as *na'-tsu*. It is interesting to note that a number of the Comanche names for important medicines have this ending.

The flowers of the sneezeweed (*Helenium microcephalum*) were
[344] broken up and inhaled to induce sneezing as an aid in the expulsion of afterbirth. These flowers were similarly used in clearing the nasal passages. It seems likely that the plant would be effective for such purposes, as it secretes a resin which Stemen and Meyers (23, p. 599) say is poisonous to some people; it causes a skin condition similar to that produced by poison oak (poison ivy). This resin in contact with the nasal membranes would probably induce sneezing.

Two other plants were said to be employed in obstetrical cases.
[841] A tea made from the root of an unidentified plant (Comanche: *pehenatsu*) was drunk to check excessive menstrual discharge. The Arikara also use a root for this purpose, that of the mallow (*Malva coccinea*) triturated with the gum from the chokecherry and given as a drink (8, p. 74). After childbirth the Comanche woman was
[844] laid on a padding of plants of silvery wormwood (*Artemisia filifolia*) over hot coals. No explanation of this procedure was obtained; the plant was widely used, however, both medicinally and ceremonially, throughout the Plains region, and smoke from it was considered effective in purification.

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Plant remedies played a part in the Comanche treatment of venereal diseases. The root of the thistle (*Cirsium undulatum*) was boiled and the liquid drunk in cases of gonorrhea. Another medicinal drink for gonorrhea was prepared by making an infusion of the stems of an unidentified plant (Comanche: *mawitsɔkᵛ*). Syphilitic sores were treated with the ashes of the stems of little bluestem grass (*Andropogon scoparius*).

Two plants were used by the Comanche, in much the same manner, for both toothache and sore throat. For toothache the root of the purple coneflower (*Echinacea sp.*) or the bark of the root of the prickly ash (*Zanthoxylum americanum*) was held against the tooth to relieve pain. In cases of sore throat the root of the coneflower was boiled in water and the liquid drunk, or the inner bark of the prickly ash was ground and placed in the throat. This similarity may indicate some association of tooth and throat troubles in the minds of the Comanche, but it very likely has no significance, since both plants were general cure-alls among various tribes. The Cheyenne utilized Echinacea for the same purposes, and the methods of application were only slightly different (9, p. 188). Echinacea was an important medicinal plant among the tribes of the Missouri River region, where its use for toothache was identical with that of the Comanche, but no mention is made of it as a cure for sore throat (7, p. 131).

Three plants were prescribed for the treatment of "sore eyes." The root of the Osage orange (*Maclura pomifera*) was boiled in water and the decoction used to bathe them; the stems of willow (*Salix sp.*) were burned and the eyes treated with the ashes; and the sap of the prickly poppy (*Argemone intermedia*) was administered to the eyes. It was said that in gathering this latter plant offerings in the form of beads or other objects were made to it.

A tea for "stomach trouble" was prepared from the roots of *Eriogonum longifolium*, and the leaves of mesquite (*Prosopis glandulosa*) were chewed, and the juice swallowed, to relieve acid stomach. A remedy for constipation was a drink made by boiling the stems of an unidentified plant (Comanche: *mawitsɔkᵛ*).

The bark of the prickly ash (*Zanthoxylum americanum*) was mixed with water and the decoction drunk as a cure for fever. Two other plants were also specified for the treatment of fever. The leaves of one of these (Comanche: *poiya*) were mixed with an herb (unknown

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824 to the informant) and boiled, the brew being used both externally
278 and internally. The stems of a sneezeweed (*Helenium autumnale*)
757 were soaked in water, and the body was bathed with this liquid. As a cure for colds the bark of the sumac (*Rhus trilobata*) was chewed and the juice swallowed.

A few miscellaneous remedies remain to be described.[4] The leaves of snakeweed (*Gutierrezia sarothrae*) were mixed with some other substance (unknown to the informant) as a remedy for whooping cough, and the roots of the nightshade (*Solanum sp.*) were boiled and the decoction prescribed as a general tonic, particularly in cases of tuberculosis. An infusion for reducing swellings was made from the red false mallow (*Malvastrum coccineum*) steeped in water. The tribes of the Missouri River region employed this plant in a similar manner (7, p. 103). Their practice was to chew the roots and apply
[752] them to inflamed sores and wounds as a cooling and healing salve. The mucilaginous properties of the plant probably account for its use in this way. The roots of the dotted button snakeroot (*Liatris punctata*) were chewed and the juice swallowed as a cure for swollen testes. The leaves of the pecan (*Carya illinoensis*) or of the walnut (*Juglans nigra*), ground and rubbed on the affected part, were thought efficacious for ringworm.

824 The Comanche used the branches of the Osage orange (*Maclura*
411 *pomifera*) in the manufacture of bows. This was the preferred wood
434 for the making of bows throughout most of the Plains region. Since the Osage orange occurs in only a limited area, from southern Missouri to northern Texas, its wood became a valuable trade article. There are accounts telling of the great demand for it among tribes as far north as the Arikara and the Blackfoot and as far west as the Pueblos. John D. Hunter, who spent many years as a captive among the Indians of the Arkansas and Missouri country, says of the Osage orange (11, p. 173):

[825 [4] Two nonvegetal Comanche medicines were also collected. Although these
752] are not pertinent to a discussion of plant uses, they may be recorded briefly. One is the nest of some nondomestic bee (Comanche: *tipinatsu*), composed of a gummy substance which gives off a pungent odor when heated. The nest was placed on the fire; its fumes, inhaled by one who was unconscious, were said to revive the person quickly. The other medicine is a white chalky mineral, apparently fossil bones (Comanche: *tsɔoβit'sitsuni*), which was obtained from deposits and used in treating sprains and fractures. The Comanche considered
[776] this mineral to be the bones of Piamupits, a supernatural being.

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They manufacture it into bows, which become articles of commerce, and are sometimes exchanged for peltries, etc. I knew a Sioux to give his horse for a single one; and among the upper tribes they frequently bring three or four beaver skins each. The tree is so highly valued, that they never destroy it, except when wanted for use, or in the territories of their enemies; in the latter case, they make its destruction as particular an object, as they do that of their game.

Since the Comanche were more or less in control of at least a part of the area in which the Osage orange grew they were doubtless in a position to profit through trading it to other tribes. The Tewa tribes of the Rio Grande valley specified the Comanche particularly as a source of their Osage orange bowwood (20, p. 68).

Marcy and McClellan (15, p. 98) describe the bows of the Comanche as being made of the tough and elastic wood of the Osage orange, "strengthened and reinforced with the sinews of the deer wrapped firmly around them." This brief and incomplete description suggests the sinew-backed bow which is classified by Mason (17, p. 638) as the "seized bow" and which had sinew "wrapped about" it, but Mason seems nowhere to describe this bow in detail, has no illustrations of it, and gives no distribution of it among American Indians. The description might also apply to the sinew-lined type of sinew-backed bow except that it does not mention the lining of sinew, often inconspicuous, which was usually bound on by transverse bands of sinew. The "Shoshonean or narrow" type of sinew-lined bow (17, pp. 638, 643, and Plates 61 and 79) may be indicated. This bow had its distribution among the Shoshonean tribes of the Great Basin and among the Apache, the Navajo, and the Pueblos, but, according to Mason, did not occur east of the Rocky Mountains (17, pp. 640, 643). Wissler (25, pp. 159–160), however, examined bows in the American Museum of Natural History from various Plains tribes and noted sinew-lined ones from some of the northern Plains tribes. He considered these intrusive from the sinew-backed bow area to the immediate west, supplementary to the self bow, and of exceptional occurrence. The Comanche bows which Wissler mentioned appear to have been of the simple, unbacked type. It does not seem likely that the Comanche bows mentioned by Marcy and McClellan were such, for Mason nowhere describes or illustrates self bows bound with sinew. Whether or not the bows seen by Marcy and McClellan were sinew-backed, and, if so, whether or not they were typical Comanche bows remain open questions. There is,

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824 apparently, no doubt that the Comanche were in frequent contact
411 with tribes using the sinew-lined bow, and that the tribes most closely related to the Comanche habitually used such bows.

Arrow shafts were made from straight stems of the rough-leaved dogwood (*Cornus asperifolia*). This species was also the preferred arrow material of the tribes of the Missouri River region (7, p. 108). Marcy and McClellan (15, p. 98) describe the arrows of the Comanche as being "twenty inches long, of flexible wood, with a triangular point of iron at one end, and two feathers intersecting each other at right-angles, at the opposite extremity." They do not specify the material used for arrows further than by saying that it was "flexible wood." Arrows for the *aratsi* game were made from the stems of
[824] the soapberry (*Sapindus Drummondii*). Wood for game sticks was obtained from the buttonbush (*Cephalanthus occidentalis*).

824 The leaves of the smooth sumac (*Rhus glabra*) were mixed with
276 tobacco. The addition of other plant materials to tobacco was a common practice among many tribes of Indians, the leaves of smooth sumac being widely used in this way. Chamberlain (6, p. 72) notes that this species was smoked by the Gosiute, and Gilmore (7, p. 100) cites its use by the Indians of the Upper Missouri, but neither writer mentions its being mixed with tobacco. McGuire (14, p. 385) gives Marcy and McClellan (16, p. 102) as his authorities for the following: "Captain Marcy refers to the Comanche being extravagantly fond of smoking tobacco, which they call pah-mo, mixed with the leaves of sumac (*Rhus trilobata*)." West (24, p. 107) accepts this without question and repeats it. In neither the 1853 (15) nor the 1854 (16) edition of Marcy and McClellan are we able, however, to find this complete statement. The passage on Comanche smoking in these volumes (15 and 16, p. 102) is as follows: "All of them [the Comanche] are extravagantly fond of tobacco, which they use for smoking, mixed with the dried leaves of the sumac, inhaling the smoke into their lungs and giving it out through the nostrils." Evidently the Comanche term for tobacco and the name of the particular species of sumac were taken by McGuire from some other source and not from Marcy and McClellan, as is implied. It may be true that *Rhus trilobata* was smoked by the Comanche, but *Rhus glabra* was specified by our informants as the species which was smoked, and medicinal uses only were ascribed to the former. We know of only one other reference to *Rhus trilobata* as a smoking material, that by

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Grinnell (9, p. 180) for the Cheyenne, but *Rhus glabra* was commonly used by many tribes of Indians. The latter is the sumac, which Schultes (21, p. 138) mentions as used by the Kiowa. 824 276

The leaves of two plants were said to be employed as wrappings for cigarettes. One of these is the greenbrier (*Smilax bona-nox*), and the other the blackjack oak (*Quercus marilandica*). Our notes give no explicit occasions on which the leaves of the blackjack oak were made into cigarette wrappings, but this was doubtless done chiefly at peyote ceremonies based upon the religious use of the cactus. According to Schultes (21, p. 138), this use of blackjack oak leaves (given as *Quercus nigra*) in the peyote ceremony is a common practice. La Barre (12, p. 48) states that cornhusk cigarettes are standard in the Kiowa–Comanche peyote ceremony, but that the Comanche and the Shawnee sometimes employ the leaves of the blackjack oak. Opler (18, p. 28) mentions the rolling of tobacco in oak leaves (species not given) or in cornhusk in the peyote ceremony of the Carrizo and the Lipan Apache. 824 276 796

Mr. Carlson and the other members of the field party engaged in a Comanche peyote ceremony, but as this will be described in a later report and as a rather full account of the Kiowa–Comanche type of ceremony has recently appeared (12, pp. 43–53), we need give little attention to peyote here. Formerly the Comanche doubtless obtained their peyote (*Lophophora Williamsii*) while they were on expeditions into its native habitat in the Rio Grande region of Texas and southward, but more recently they have acquired it by trade and have even cultivated it. La Barre (12, p. 57) refers to an unpublished manuscript by Hoebel describing an early ritualistic Comanche expedition for peyote. Apparently the Comanche were also familiar with the mescal bean (*Sophora secundiflora*), which has a native range roughly similar to that of peyote. La Barre (12, pp. 105–109, 126–127) summarizes the data concerning this narcotic plant, which seems at one time to have been the center of a prepeyote narcotic cult and whose use has been retained in connection with magic and ornament, particularly in association with the peyote ceremony. Participants in the peyote ceremony witnessed by our party had red beans, which were probably mescal beans (but may have been Erythrina), on the fringes of their leggings. Skinner (22, p. 261) describes Iowa leggings, ornamented with mescal beans, which he considered might be "of the modified Kiowa–Comanche

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824 type generally affected by members of the Peyote cult among all
276 Oklahoma tribes," and he also mentions (p. 163) obtaining a necklace
796 of mescal beans from the Iowa, but he does not connect either of these with the peyote ceremony. Schultes (21, p. 141) states that a
[789 Kiowa peyote leader wore mescal beans on the lower part of his
841] leggings "as a safeguard against stepping on menstrual blood," and La Barre (12, p. 45) observed mescal beans worn on Kiowa peyote moccasins for the same purpose. La Barre (12, p. 106) indicates an
[301] unpublished manuscript by Mooney as his source for the statement that the Comanche used to get mescal beans from near Fort Stanton (New Mexico), but apparently only for ornamental purposes.

783 Our informants stated that in ceremonies the leaves of the red
824 cedar or juniper (*Juniperus virginiana*) were placed on the fire and the smoke inhaled for purification. Throughout the Plains the red cedar is associated with ceremonies and particularly with purification. La Barre (12, pp. 45–53) mentions several instances of the participation of a "Cedar-man" in the Kiowa–Comanche type of peyote rites. The duties of this individual seem to be to sprinkle "dried and rubbed cedar" on the fire, and at certain stages the members purify themselves in the smoke from this incense. Schultes (21, p. 139) describes the typical manner of use of the cedar incense in peyote ceremonies.

824 The Comanche brought great quantities of wormwood or "sage"
352 (*Artemisia filifolia*) into the tipi for use as cushions. There is a
171 strong suggestion that they did this in the ceremonial tipi especially, where "sage" (*Artemisia spp.*) was commonly employed as floor covering and cushions. La Barre (12, p. 45) mentions the spreading of sagebrush in the tipi for seats in the Kiowa–Comanche type of peyote ceremony and the resting of the "father peyote" on sprigs of sage (pp. 46–47). Opler (18, pp. 277, 279) says that the Carrizo and the Lipan Apache also strewed it on the floor and describes the placing of the "chief peyote" on it, for the peyote is considered to be friendly to no plant but this. Schultes (21, pp. 139–140) describes approximately the same uses of sage (the species *Artemisia vulgaris*) in the tipi, mentions the chewing of a few leaves of it before eating peyote, and also its place in the sweat lodge.

824 Two other plants used by the Comanche in the sweat lodge are
343 the skunkbush (*Rhus trilobata*) and little bluestem grass (*Andropogon scoparius*). The bark of the former was placed in hot water and the

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fumes were inhaled. The stems of the latter were tied in bundles with which the Comanche switched themselves.

Yucca roots (*Yucca louisianensis*) were ground up for soap. Various species were used as detergents by Indians in the Plains and the Southwest particularly. The ordinary method of preparation is to strip the bark off the root and beat the root to a pulpy mass. The pulp is cut into small pieces which are dried in the sun and can then be kept until needed. When required, two or three of these pieces are soaked in water for about an hour, after which the water is agitated briskly with the hands. Suds immediately appear, forming a good lather. The Southwestern Indians prescribe yucca suds for ceremonial hair washing and also prefer them for laundering blankets and woolen garments. The roots have a high saponin content; commercial soap has been successfully manufactured from them. Another plant used in toiletry was an unidentified species (Comanche: *nemeʟisas*) of the mint family, the fragrant leaves of which were valuable for perfuming.

The leaves of croton (*Croton monanthogynus*) were said to be ground and mixed with brains of animals for use in curing hides. This and other species of croton were widely utilized medicinally, but we know of no other instance of its employment in tanning. Richardson (19, p. 67) quotes two somewhat varying discussions of Comanche tanning, but in neither of these is any plant material mentioned.

Most tribes of Indians prepared brooms by binding together the tough and moderately flexible stems of some plant, but there seems to be little or no uniformity in the plants thus used. The one specified for this purpose by the Comanche was the snakeweed (*Gutierrezia sarothrae*).

Comanche names were obtained for all the plants collected, yet the informants, although knowing the names, could give no use for a number of them. Professor Kroeber has stressed the importance of collecting and recording negative data of this sort as well as positive data, and lists of "plants not used" have appeared in papers by his students. The Comanche informants could offer no use for the following plants: cattail (*Typha latifolia*), white sage (*Artemisia ludoviciana*), false indigo (*Amorpha angustifolia*), western ragweed (*Ambrosia psilostachya*), a grass (*Elymus sp.*), and two unidentified plants bearing the Comanche names *kusiwɔna*, and *itse* or *ṭimɔyhɔ*. It may well be that some or all of these were utilized and that their functions

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824 were not known by the particular informants questioned. One man felt that the white sage had a practical value, but did not know what it might be. Some of these plants have been recorded as used by tribes more or less in contact with the Comanche and may have been employed in a similar manner by the Comanche. The informant who pointed out the western ragweed (*Ambrosia psilostachya*) gave its name as *wɔanatsu*, but knew of no use for it. The ending *natsu* [757] indicates a medicinal plant, and it is interesting to note that this plant was prescribed by the Cheyenne in the treatment of colds, cramps in bowels, and bloody stools (9, p. 188), and that it was also valued by the Gosiute in the treatment of sore eyes (6, p. 49), but has a quite different name, without the *natsu* ending, in Gosiute.

221 166 824 The Comanche were formerly a very nomadic people, particularly after their acquisition of the horse. Marcy and McClellan (15, pp. 94–95) describe them as following the buffalo from place to place and also tell of their horse- and cattle-stealing expeditions, which covered over a thousand miles and even took them into the northern provinces of Mexico, consuming two years or more at a time. Richardson (19) tells something of the migrations, movements, expeditions, and contacts of the Comanche. They appear to have been in at least occasional touch with Apache and Pueblo Indians of the Southwest and with Plains and Plateau tribes as far north as what is now the Canadian border. It seems reasonable that they should have been an important agency in the diffusion of plants and of knowledge of plant uses as well as of other culture traits. They controlled practically all the limited area in which the valuable *bois d'arc* or bowwood grew and from which it was traded to the Siouan, the Caddoan, and other tribes to the north, and to the Pueblos to the west. They doubtless also were instrumental in spreading the narcotic cults based on the peyote and mescal beans. La Barre (12, p. 43) considers the Kiowa and the Comanche to be the center of diffusion of peyote in the Plains. Both peyote and mescal beans were native to the southwestern region of Texas and in Mexico, but were diffused almost throughout the Plains and as far northeastward as the Great Lakes. Certainly the many similar plant uses of the Comanche and of other tribes of the Plains, the Plateau, and the Southwest indicate either Comanche contact with these various peoples or a very active dissemination of such traits throughout these areas.

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